Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. A system for disinfecting shopping carts comprising:
a treatment station for applying a disinfectant to a shopping cart;
wherein said treatment station defines an entry, an exit, and a pathway extending between said entry and exit and along which a shopping cart travels; and
a conveyor system for transporting shopping carts relative to said treatment station at a first speed and at a second speed that is different than said first speed so as to perform a shopping cart nesting related operation.

[c2] 2. The system of claim 1, wherein said conveyor system comprises:
a first conveyor for moving a shopping cart at a first speed; and
a second conveyor for moving a shopping cart at a second speed that is greater than said first speed.

[c3] 3. The system of claim 2, wherein:
said first conveyor extends from a first conveyor first end to a first conveyor second end; and
said second conveyor extends from a second conveyor first end to a second conveyor second end;

wherein during operation, shopping carts move from said first conveyor first end towards said first conveyor second end;

wherein during operation, shopping carts move from said second conveyor first end towards said second conveyor second end;

wherein said first and second conveyors are each located so as to define a travel path for a cart being transported by said first and second conveyors;

wherein when a cart travels along said travel path, said first conveyor first and second ends occur in the same order as said second conveyor first and second ends.

[c4] 4. The system of claim 3, wherein:

said second conveyor first end is located between said first conveyor first and second ends.

[c5] 5. The system of claim 4, wherein:

said first conveyor has a first surface for engaging a shopping cart;

wherein said first surface, at a location substantially adjacent to said second conveyor first end, has a first elevation; and

said second conveyor has a second surface for engaging a shopping cart;

wherein said second surface, at said location substantially adjacent to said second conveyor first end, has a

second elevation that is different than said first elevation.

[c6] 6. The system of claim 5, wherein:
said second elevation is greater than said first elevation.

[c7] 7. The system of claim 5, wherein:
said location adjacent to said second conveyor first end is at a site along said travel path that when a shopping cart is traveling along said path, occurs before a disinfectant can be applied to the shopping cart.

[c8] 8. The system of claim 4, wherein:
said first conveyor and said second conveyor are positioned so as to impart a rotation to a shopping cart during a transition of the shopping cart from said first conveyor to said second conveyor.

[c9] 9. The system of claim 3, wherein:
said second conveyor second end is located between said first conveyor first and second ends.

[c10] 10. The system of claim 9, wherein:
said first conveyor has a first surface for engaging a shopping cart;
wherein said first surface, at a location substantially adjacent to said second conveyor second end, has a first elevation; and

said second conveyor has a second surface for engaging a shopping cart;

wherein said second surface, at said location substantially adjacent to said second conveyor second end, has a second elevation that is different than said first elevation.

[c11] 11. The system of claim 10, wherein:

wherein said second elevation is greater than said first elevation.

[c12] 12. The system of claim 10, wherein:

said location adjacent to said second conveyor second end is at a site along said travel path that when a shopping cart is traveling along said path, occurs after a disinfectant can be applied to the shopping cart.

[c13] 13. The system of claim 9, wherein:

said first conveyor and said second conveyor are positioned so as to impart a rotation to a shopping cart during a transition of the shopping cart from said second conveyor to said first conveyor.

[c14] 14. The system of claim 3, wherein:

said second conveyor first and second ends are located between said first conveyor first and second ends.

[c15] 15. The system of claim 14, wherein:

said first conveyor has a first surface for engaging a shopping cart;

wherein said first surface, at a first location substantially adjacent to said second conveyor first end, has a first elevation;

wherein said first surface, at said second location substantially adjacent to said second conveyor second end, has a second elevation;

said second conveyor has a second surface for engaging a shopping cart;

wherein said second surface, at said first location substantially adjacent to said second conveyor first end, has a third elevation;

wherein said second surface, at said second location substantially adjacent to said second conveyor second end, has a fourth elevation.

[c16] 16. The system of claim 15, wherein:

said third elevation is greater than said first elevation; and

said fourth elevation is greater than said second elevation.

[c17] 17. The system of claim 15, wherein:

said first location adjacent to said second conveyor first end is at a site along said travel path that when a shopping cart is traveling along said path, occurs before a

disinfectant can be applied to the shopping cart; and said second location adjacent to said second conveyor second end is at a site along said travel path that when a shopping cart is traveling along said path, occurs after a disinfectant can be applied to the shopping cart.

[c18] 18. The system of claim 14, wherein:
said first conveyor and said second conveyor are positioned so as to impart a rotation to a shopping cart during a transition of the shopping cart between said first conveyor and said second conveyor.

[c19] 19. The system of claim 2, wherein said conveyor system comprises:
a staging bar for moving a shopping cart between a first position that is separated from said first and second conveyor and a second position that allows one of said first and conveyors to engage a shopping cart.

[c20] 20. A system for disinfecting shopping carts comprising:
a treatment station for applying a disinfectant to a shopping cart; and
a transport system for moving a shopping cart relative to said treatment station;
wherein said treatment station defines an entry, an exit, and a pathway extending between said entry and said exit and along which a shopping cart travels during op-

eration of the system;

wherein said treatment station comprises a first modular unit and a second modular unit that is operatively attached to said first modular unit;

wherein said first modular unit defines a first portion of said pathway and comprises a first ground engagement surface;

wherein said second modular unit defines a second portion of said pathway and comprises a second ground engagement surface;

wherein when said first and second ground engagement surfaces are in contact with a substantially flat ground surface, said first and second portions of said pathway are substantially aligned.

[c21] 21. The system of claim 20, wherein said first modular unit comprises:

a first side;

a second side that is separated from and substantially parallel to said first side;

wherein said first portion of said pathway, in the direction along which a shopping cart travels, extends substantially perpendicular to said first and second sides;

wherein a lateral plane is located midway between and substantially parallel to said first and second sides.

[c22] 22. The system of claim 21, wherein:
said first modular unit comprises a hanger for supporting a conduit;
wherein said hanger is substantially symmetrical relative to said lateral plane.

[c23] 23. The system of claim 21, wherein:
said first modular unit comprises a reservoir for holding a liquid disinfectant;
wherein said reservoir is substantially symmetrical relative to said lateral plane.

[c24] 24. The system of claim 21, wherein:
said first modular unit comprises a baffle system for preventing liquid disinfectant from moving outside of said first modular unit.

[c25] 25. The system of claim 21, wherein:
said first modular unit comprises an air nozzle structure for directing air onto a shopping cart after a liquid disinfectant has been applied to the shopping cart;
wherein said air nozzle system is substantially symmetrical relative to said lateral plane.

[c26] 26. The system of claim 20, wherein:
said first modular unit is adapted to apply a liquid disinfectant to a shopping cart.

[c27] 27. The system of claim 20, wherein:
said first modular unit is adapted to applying a first liquid disinfectant to a shopping cart; and
said second modular unit is adapted to apply a second liquid disinfectant to a shopping cart.

[c28] 28. The system of claim 20, wherein:
said first modular unit is adapted to apply a liquid disinfectant to a shopping cart; and
said second modular unit is adapted to provide said liquid disinfectant to said first modular structure.

[c29] 29. The system of claim 20, wherein:
said first modular unit is adapted to apply a liquid disinfectant to a shopping cart; and
said second modular structure is adapted to apply moving air to a shopping cart after a liquid disinfectant has been applied to the shopping cart.

[c30] 30. A system for disinfecting shopping carts comprising:
a treatment station for applying a disinfectant to a shopping cart; and
a transport system for moving a shopping cart relative to said treatment station;
wherein said treatment station defines an entry, an exit, and a pathway extending between said entry and said

exit and along which a shopping cart travels during operation of the system;
wherein said treatment station comprises a molded structure.

[c31] 31. The system of claim 30, wherein:
said molded structure comprises an enclosure that defines at least a portion of said pathway and a liquid disinfectant application structure.

[c32] 32. The system of claim 31, wherein:
said liquid disinfectant application structure comprises a hanger for supporting a conduit that is used to transport liquid disinfectant.

[c33] 33. The system of claim 31, wherein:
said liquid disinfectant application structure comprises a reservoir for holding a liquid disinfectant.

[c34] 34. The system of claim 31, wherein:
said liquid disinfectant application structure comprises a baffle system for preventing liquid disinfectant from moving beyond a defined space.

[c35] 35. The system of claim 30, wherein:
said molded structure comprises an enclosure that defines at least a portion of said pathway and an air application structure.

[c36] 36. The system of claim 35, wherein:
said air application structure comprises an inlet for mating with the outlet of a blower.

[c37] 37. The system of claim 35, wherein:
said air application structure comprises an outlet nozzle for directing air onto a shopping cart after a liquid disinfectant has been applied to the shopping cart.

[c38] 38. The system of claim 30, wherein:
said molded structure comprises an enclosure that defines at least a portion of said pathway.

[c39] 39. The system of claim 30, wherein:
said molded structure comprises a hanger for supporting a conduit for conveying a liquid disinfectant.

[c40] 40. The system of claim 30, wherein:
said molded structure comprises a baffle system for preventing liquid disinfectant from moving beyond a defined space.

[c41] 41. The system of claim 30, wherein:
said molded structure comprises a reservoir for holding a liquid disinfectant.

[c42] 42. The system of claim 30, wherein:
said molded structure comprises an air inlet for mating

with the outlet of a blower.

[c43] 43. The system of claim 30, wherein:
said molded structure comprises an outlet nozzle for directing air onto a shopping cart after a liquid disinfectant has been applied to the shopping cart.

[c44] 44. A system for disinfecting shopping carts comprising:
a treatment station for applying a disinfectant to a cart; and
a transport system for moving a shopping cart relative to said treatment station;
wherein said treatment station defines an entry, an exit, and a pathway extending between said entry and said exit and along which a shopping cart travels during operation of the system;
wherein said treatment station comprises:
a reservoir for holding a liquid disinfectant;
an application structure for dispensing liquid disinfectant into at least a portion of said pathway; and
a low-pressure pump for moving liquid disinfectant from said reservoir to said application structure.

[c45] 45. The system of claim 44, further comprising:
a passageway between said pathway and said reservoir that allows at least a portion of the liquid disinfectant that has been dispensed into said pathway to return to

said reservoir.

[c46] 46. The system of claim 44, wherein:
said low-pressure pump comprises a centrifugal pump.

[c47] 47. The system of claim 46, wherein:
said centrifugal pump is located at substantially the same elevation above the ground as said reservoir when the system is in an operational configuration.

[c48] 48. The system of claim 44, further comprising:
a heating element located within said reservoir.

[c49] 49. The system of claim 44, further comprising:
a pump inlet conduit extending from said low-pressure pump into said reservoir; and a heat sink attached to said pump inlet conduit for transferring heat from said reservoir to said low-pressure pump.

[c50] 50. The system of claim 44, wherein:
said application structure comprises a conduit.

[c51] 51. The system of claim 44, wherein:
said application structure comprises a manifold for holding liquid disinfectant conveyed from said reservoir by said low-pressure pump.

[c52] 52. The system of claim 44, further comprising:
a baffle system for preventing liquid disinfectant from

moving beyond a defined space.

[c53] 53. The system of claim 44, further comprising:
a removable receptacle for receiving liquid disinfectant from said reservoir that is to be disposed.

[c54] 54. The system of claim 44, further comprising:
a wash station for washing a shopping cart before the shopping cart passes said entry of said treatment station.

[c55] 55. The system of claim 54, wherein:
said wash station comprises a hand-held wand for use in spraying a shopping cart.

[c56] 56. The system of claim 44, further comprising:
a brush device for removing particles from the wheels of a shopping cart.

[c57] 57. The system of claim 44, wherein:
said brush device comprises a brush and an electrical actuator for producing a motive force for moving said brush.